



FLOWSHEET



AIChE NorCal Section

October 2001

Issue 12

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Chairperson's Corner

By R. Maqbool Qadir, PE

qadir@enprosolutions.com

All of us at NorCal AIChE feel a profound sense of loss and grief at the events of September 11. Our hearts go out to those who have lost their lives in New York City, Washington, D.C., and Pennsylvania and the loved ones that have been left behind. The bereaved family members and loved ones are constantly in our thoughts and prayers.

Like everything else, our programming was affected by the tragic events of September 11. Because of heightened security concerns, Chevron had to cancel the plant tour of the Chevron refinery in Richmond. I regret any inconvenience to our members who had registered for the meeting. If feasible, we will reschedule the tour later in the year.

A number of exciting things are happening in October and November and we look forward to your participation. Please join us at Monarch Bay Golf Club in San Leandro on October 12, 2001, for the golf tournament which our volunteers have worked so hard to arrange. As many of you know the proceeds go towards our scholarship funds. The October dinner meeting features a talk on power generation technologies by Mr. Jake Rudisill of Calpine Corporation.

Plan now to attend the November

Annual Meeting in Reno, November 4 through 9, 2001. Check out all the events at the web site. Our profession is continuously evolving and incorporating new technologies spawned by the latest scientific breakthroughs. Discover some of the most exciting new areas in chemical engineering at the annual meeting. The technical programming and short courses include the new areas of nanotechnology, bioinformatics, genomics, pharmaceutical, biotechnology and molecular modeling. What will these new technologies mean for the profession in terms of jobs, skills, markets and societal impact? If you attend the meeting you can ask these questions of the leaders in the field.

We need your continued participation. If you would like to contribute an article for the Flowsheet contact Dr. Tom Karis. Please contact myself or any of the other officers to volunteer on a committee.



Place Your ad in the FlowSheet. Full-page ad \$700, half-page ad \$350, quarter-page ad \$175, and business-card-sized ad \$75 per issue. Issues remain posted indefinitely on the web in pdf and html format. The same advertisement will also be visibly posted on the AIChE NorCal web site at no extra charge, for the issue month.



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North Bay Meeting Notice



Date: October 23, 2001	Location: Faz Restaurant, Pleasanton
Time: Social Hour - 6:00 pm Dinner - 6:45 pm Presentation - 8:00 pm	Price: \$28 - Members \$21 - Retirees/Unemployed \$15 - Students \$30 - Anybody not pre-registered or non-members



California's Energy Crisis - Gone but not Forgotten?

Jake M. Rudisill

Senior Vice President-Western Region, Calpine Corporation

How valuable is electricity? Virtually every business and individual in California has been affected by the energy crisis. We have many questions and concerns: How did we get here? What solutions are being sought? Is it time to end "deregulation"? Who will build the power plants needed? Are California utilities going to remain in business? Mr. Jake Rudisill, Senior Vice President of the Calpine Corporation will tell us how the leading independent power producer in the U.S. is helping the West deal with the crisis. Come and learn about Calpine's current projects, potential employment opportunities and how you can benefit from Calpine's activities.

This promises to be a tremendously exciting evening with a very lively discussion. Have your questions ready for Calpine Corporation. Many of us have an opinion on the role we can play as Chemical Engineers in providing solutions. However, decision makers may not be aware of Chemical Engineers' technical capabilities in power generation, energy conservation and energy recovery. How can we be heard and bring our expertise to bear on the technical and public policy issues facing decision makers? Bring your suggestions.

About The Speaker: Jake Rudisill serves as Senior Vice President for San Jose-based Calpine Corporation and is responsible for leading the business development, asset optimization and administration of the Western Region's activities. Jake's prior experience includes 22 years in the geothermal energy industry, with most of that spent in Sonoma and Lake Counties. Jake has a Master's degree from Stanford University in Mechanical Engineering and a Bachelor's from North Carolina State University. He is a North Carolina native who stayed in California after Stanford to see what the state was really like, and loved it. There are few things he enjoys more than watching or playing basketball and drinking fine wines (both California and Bordeaux), but not necessarily simultaneously.

Reservations: Requested by the end of the day, Tuesday October 16. Register online at www.aichenorcal.org. Be sure to select your menu choice. For additional information contact NorCal AIChE's Vice Chair, Dr. Andre Da Costa on (650) 328-2228 Ext. 159.

Menu: Seasonal Baby Greens with Raspberry Vinaigrette, Choice of: Breast of Chicken Marsala, Grilled Salmon or Vegetarian-Grilled Vegetables with Pasta. Rice Pilaf, Fresh Seasonal Vegetables, House-baked Focaccia Bread and Sourdough Baguettes. Tiramisu, Coffee/Decaffeinated Coffee/Tea.

Location: Faz Restaurant (At Four Points Hotel by Sheraton), 5121 Hopyard Road, Pleasanton, CA, Tel (925) 460-0434.

Directions: Take I-680 to I-580 Junction; East on 580 to Hopyard; South on Hopyard, cross Owens Drive and do a U-turn at Gibraltar Dr. **BART:** to end of the line at Pleasanton. Walk south and west about 3 blocks.





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Golf Tournament Coming Up!!!!

You're invited to the Fourth Annual AIChE Golf Scholarship Benefit Tournament, Monarch Bay Golf Club, San Leandro, Friday, October 12th, 2001!!

Register online at <http://www.aiche-norcal.org/golf/golf2001.html> contact: Mario Sternad @ (707) 546-0766 x 170 or (510) 559-9157, Mster3@AOL.com

The National AIChE 2001 Reno Meeting: For more information, please visit our web site at www.aiche2001reno.org.

FYI Relative to other professionals, chemical engineers are better paid by a considerable margin, especially at the bachelor's degree level, where, according to the AIChE survey, they enjoyed a median base salary of \$70,000 for the year 1999. This compares with the median of \$53,100 as of March 1, 2000, for bachelor's degree chemists responding to the ACS survey. Allowing for age differences would make the advantage for chemical engineers even larger.

The difference is about the same for those with master's degrees, with medians of \$80,000 for chemical engineers and \$62,000 for chemists. At the Ph.D. level, chemists are more competitive--a median of \$79,000 versus the \$85,000 for chemical engineers.

These medians for chemical engineers from the AIChE survey are generally in line with the median salaries for the 2,000 chemical engineers who are ACS members and responded to ChemCensus 2000. For them, the medians were \$67,000 at the bachelor's degree level, \$77,500 at the master's degree level, and \$88,000 at the Ph.D. level.

How well chemists and chemical engineers do financially compared with other scientists and engineers is detailed in NSF's "Science and Engineers Indicators 2000."

Analysis of the data on 1997 median salaries presented in the report indicates that chemical engineers do particularly well. At the bachelor's and master's degree levels, they top the rankings at \$62,000 and \$70,000, respectively. For Ph.D.s, they are second, at \$72,100, to physicists and astronomers, at \$73,000.

How well chemists and chemical engineers do financially compared with other scientists and engineers is detailed in NSF's "Science and Engineers Indicators 2000."

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Wanted: Flowsheet Articles and Volunteers

It's your chance to speak out. Please send your contributions to Tom Karis, tlzk@garlic.com. Contact Mac Qadir for available committee opportunities.



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Working Committees

Dinner Arrangements

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Dave Connors
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Mario Sternad, PE
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Symposium

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David Cohen, PhD
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High School

Scholarships

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College Awards

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Chem Eng Excellence

Awards/BAEC

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Testimonials were submitted in defense of the chemical engineering profession advocating that we are a distinct profession and our contributions are needed to protect people and the environment. We will be printing selected testimonials for your information. To submit your own testimonial, contact Bob Katin, rakatin@dow.com, or Diane Spencer baspence@silcon.com.

Testimonial of Jim Fairchild, PE

(760) 372-2440

The current engineering licensing law in the State of California has created an absurd situation where the only persons qualified to do selected engineering work cannot prepare and sign a report about that work. And the only persons legally allowed to prepare and sign a report about that same work are not technically and professional qualified to do the work or write the report.

For example, part to the State of California requirement to obtain a waste discharge permits is an evaluation of alternate processes to produce a given product. The product in question for IMC Chemicals is boric acid. According to the State of California Water Quality Control Board, Lahontan Region, IMC

Chemicals must provide an Engineering Report, prepared by an Expert, that evaluates all of the alternate processes that could be used to produce boric acid from the mineral or brine reserves in Searles Lake. The Engineering Report must also be signed by a registered engineer that the State of California law says must be a civil engineer.

Of course, all of the alternate processes being evaluated are necessarily chemical processes. But the **ONLY** type of engineer qualified to describe the several chemical process alternatives, including the preparation of flow sheets, heat and material balances, and process control diagrams, is a chemical engineer. Simply put, no other discipline has the formal educational training necessary to do chemical process design work. This includes civil engineers.

The only way a civil engineer would be qualified to evaluate chemical processes is if he had also been formally trained in a university as a chemical engineer. A civil engineer could not receive on-the-job training in chemical engineering because this could only have been received under the **supervision** of a chemical engineer. And of course, under the current engineering licensing law of the State of California, a chemical engineer is legally barred from engineering supervision.

What are the odds that you can find a civil engineer, who is formally trained as a chemical engineer, and who also has expertise in the chemical process you are evaluating? **ZERO**, at least in the case of IMC Chemicals and the manufacture of boric acid at Searles Lake.

Engineering Reports to regulatory agencies are legal documents, subject to court proceedings where testimony by the responsible (signing) engineer may be required. It would be extremely foolhardy for an engineer to sign an Engineering Report to a regulatory agency unless he understood in detail what he was certifying to with his signature. In the case of technical evaluations of chemical processes, the prudent civil engineer should not and probably not sign such a report prepared by someone else. The risk would be too great.